

## CLAIMS

1. A muffler (10) for exhaust systems of vehicles, comprising

- a tubular shell (12) that is internally lined with a noise-deadening material and is closed at its ends by a front wall (14) provided with an inlet (16) connectable to receive exhaust gas, and by a rear wall (19), a first chamber (26) and a second chamber (28) being defined within the tubular shell (12), which are separated by a transverse wall (30) having an inlet opening (32) and an outlet opening (34),

- a perforated inlet pipe (36) extending within the first chamber (26) from the inlet (16) to the inlet opening (32),

- gas-piping means (40, 42) extending within the first chamber (26) and having one end open to said outlet opening (34), and the other end connectable to exhaust pipes (44, 46, 50),

characterized in that said inlet opening (32) and outlet opening (34) are substantially equal in diameter to the inlet pipe (36), and are connected to each other via a toroidal duct (38) that is arranged within the second chamber (28) and is substantially equal in diameter to the inlet pipe (36).

2. The muffler of claim 1, characterized in that said toroidal duct (38) has perforated bands of a width (L) in the range  $1/8$  to  $1/4$  of the duct perimeter, and extending on the upper surface and on the lower surface of the duct astride the median line (M) of the torus.

3. The muffler of claim 2, characterized in that the width (L) of said bands is equal to  $1/6$  of the duct perimeter.

4. The muffler of any of claims 1 to 3, characterized in that said gas-piping means comprise pair of perforated pipes (40, 42) having two converging ends welded to said outlet opening (34) and in mutual contact along respective flattened surfaces (40a, 42a), so that their profile at said transverse wall (30) substantially matches with the profile of the outlet opening (34).

5. The muffler of claim 4, characterized in that said front wall (14) has at least one outlet (18, 20), and in that a corresponding one of said perforated pipes (40, 42) leads to said outlet (20) to be connected to exhaust pipes external to the shell (12).

6. The muffler of claim 5, characterized in that said front wall (14) also has a first reflux hole (22), and in that it comprises

- a toroidal joint (44) having two ends which are externally welded to said front wall (14) at said outlet (20) and at said reflux hole (22) respectively, and

5 - an outlet pipe (46, 50) extending inside the shell from said reflux hole to an exhaust outlet (24) on the rear wall.

7. The muffler of claim 6, characterized in that said outlet pipe (46) comprises a perforated end pipe (46) extending from said front wall (14) to a port (48) on said transverse wall (30), and a tail pipe (50) extending from said port (48) to said exhaust  
10 outlet (24).